

**RECEIVED  
CENTRAL FAX CENTER**

Attorney's Docket 011765-0280083  
Client Reference: P8339US

**DEC 17 2004**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re PATENT APPLICATION of:  
GEORGE ZHENG CHEN ET AL.

Confirmation No: 8466

Application No.: 09/822,831

Group Art Unit: 1746

Filed: April 2, 2001

Examiner: Crepeau, Jonathan

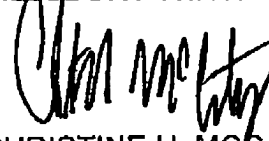
Title: CONDUCTING POLYMER-CARBON NANOTUBE COMPOSITE MATERIALS  
AND THEIR USES

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**CERTIFICATION OF FACSIMILE TRANSMISSION  
UNDER 37 C.F.R. §1.8**

I hereby certify that the following papers are being facsimile  
transmitted to the Patent and Trademark Office at (703) 872-9306 on the date  
shown below: Request for Reconsideration and Transmittal Form

PILLSBURY WINTHROP LLP



CHRISTINE H. MCCARTHY  
Reg. No. 41844

Date: December 17, 2004  
P.O. Box 10500  
McLean, VA 22102  
Telephone: (703) 905-2000  
Facsimile: (703) 905-2500

(Certification of Facsimile Transmission—page 1)

**RECEIVED  
CENTRAL FAX CENTER**

Attorney's Docket 011765-0280083  
Client Reference: P8339US

DEC 17 2004

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re PATENT APPLICATION of:  
GEORGE ZHENG CHEN ET AL.

Confirmation Number: 8466

Application No.: 09/822,831

Group Art Unit: 1746

Filed: April 2, 2001

Examiner: Crepeau, Jonathan

For: CONDUCTING POLYMER-CARBON NANOTUBE COMPOSITE MATERIALS  
AND THEIR USES

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**AMENDMENT/RESPONSE TRANSMITTAL**

Transmitted herewith is an amendment/response for this application.

**FEES**

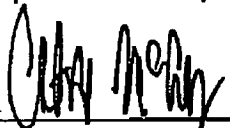
The fee for claims and extension of time (37 C.F.R. 1.16 and 1.17) has been  
calculated as shown below:

	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDIT. FEE
TOTAL	25	-	26	= 0	\$ 18.00 = \$ 0.00
INDEP.	4	-	5	= 0	\$ 88.00 = \$ 0.00
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM				+	\$ 300.00 = \$ 0.00
TOTAL ADDITIONAL CLAIM FEE					\$ 0.00
GRAND TOTAL					\$ 0.00

**FEE PAYMENT**

Authorization is hereby made to charge the amount of \$0.00 to Deposit Account No. 033975. Charge any additional fees required by this paper or credit any overpayment in the manner authorized above. A duplicate of this paper is attached.

Date: December 17, 2004  
PILLSBURY WINTHROP LLP  
P.O. Box 10500  
McLean, VA 22102  
703. 905.2143

  
CHRISTINE H. MCCARTHY  
Reg. No. 41844

Attorney Docket: 011765-0280083  
Client Reference: P8339US

**RECEIVED**  
**CENTRAL FAX CENTER**

DEC 17 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of: CHEN ET  
AL.

Confirmation Number: 8466

Application No.: 09/822,831

Group Art Unit: 1746

Filed: April 2, 2001

Examiner: Crepeau, Jonathan

Title: CONDUCTING POLYMER-CARBON NANOTUBE COMPOSITE MATERIALS  
AND THEIR USES

REQUEST FOR RECONSIDERATION

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated September 17, 2004, please reconsider the patentability of the presently pending claims based on the following arguments.

The Office Action has maintained the 35 U.S.C. 102 rejection of claims 17-24 and 26 based on Niu et al. (hereafter "Niu"). Applicants traverse the rejection based on the following arguments.

The outstanding Office Action has acknowledged that the photographs previously submitted show that a product produced by the method taught by Niu has a different structure from the claimed product, and that the Office has acknowledged that Niu's method does not produce the claimed product at a polypyrrole to nanotube weight ratio of 12.5:1. The Office Action also noted that the claimed product was synthesized with polypyrrole to nanotube weight ratios of 18:1 and 142:1 whereas Niu's product was synthesized with polypyrrole to nanotube weight ratios of 1:1 and 12.5:1.

Applicant notes that the previous Office Action indicated that Niu's product should be synthesized with a high polypyrrole to nanotube weight ratio (e.g. over 100:1) so that a direct comparison can be made. Unfortunately, Applicants' investigation has indicated that it is not possible to carry out the method of Niu with a polypyrrole to nanotube weight ratio of over 100:1. This is because polymer to nanotube ratios over 12.5:1 were found to block the filter used in the method of Niu, as previously explained in the Amendment filed February 9, 2004

CHEN ET AL. - 09/822,831  
Client/Matter: 011765-0280083

("It is not possible to use a higher ratio [higher than 12.5:1] of conducting polymer to nanotubes [in Niu], because such a ratio results in blocking of the filter pores during the filtration steps.")

This difficulty cannot be avoided because the filtration step is an essential step in Niu's method (see col. 9, lines 34-35). Thus, a comparison of products made using polymer to nanotube ratios over 100:1 is not possible. Of course, the ability to produce composite films with higher polymer to nanotube ratios is an advantage of the method of the invention over Niu's method.

Applicants submit that their experience with other nanotube-polymer composites indicates that even if it were possible to produce composite films by the method of Niu with very high polymer to nanotube ratios, such films would have the same basic morphology. The polymer would predominate as a continuous solid block containing fully encapsulated nanotubes. Increasing the polymer to nanotube ratio would simply be expected to have the effect that fewer nanotubes were encapsulated within the polymer block. This is in contrast to the structure of discrete nanotubes coated with conducting polymer of the composite films of the invention.

To address any concern that no direct comparison can be made between products prepared using Niu's method and the claimed product, the inventors have repeated the method of the invention using a polypyrrole to nanotube weight ratio of 12.5:1, and attach an electron microscopy image of the product (Fig. 1). For the Office's convenience, also attached are the electron microscopy images of the product prepared using Niu's method with a polypyrrole to nanotube weight ratio of 12.5:1 which were previously submitted with the letter of June 29, 2004 (Figs. 2 and 3).

The scale of enlargement on the Niu product (x 60 000) is three times that on the claimed product (x 20 000). Despite this, no discrete nanotubes coated with conducting polymer (as required by the claims) can be seen in the Niu product. Thus, in a direct comparison of products which both consist of polypyrrole and nanotube with a weight ratio of 12.5:1, it can be seen that the structures are very different.

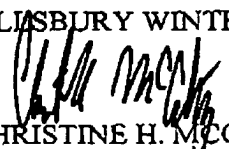
Since at low polymer to nanotube weight ratios the Niu method provides a product which is different from the claimed product, and at high polymer to nanotube weight ratios the Niu method cannot be used, it is clear that there is no polymer to nanotube weight ratio at which the Niu method which can be used to prepare the claimed product. Thus, the claims are novel over Niu.

CHEN ET AL. -- 09/822,831  
Client/Matter: 011765-0280083

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

PILLSBURY WINTHROP LLP

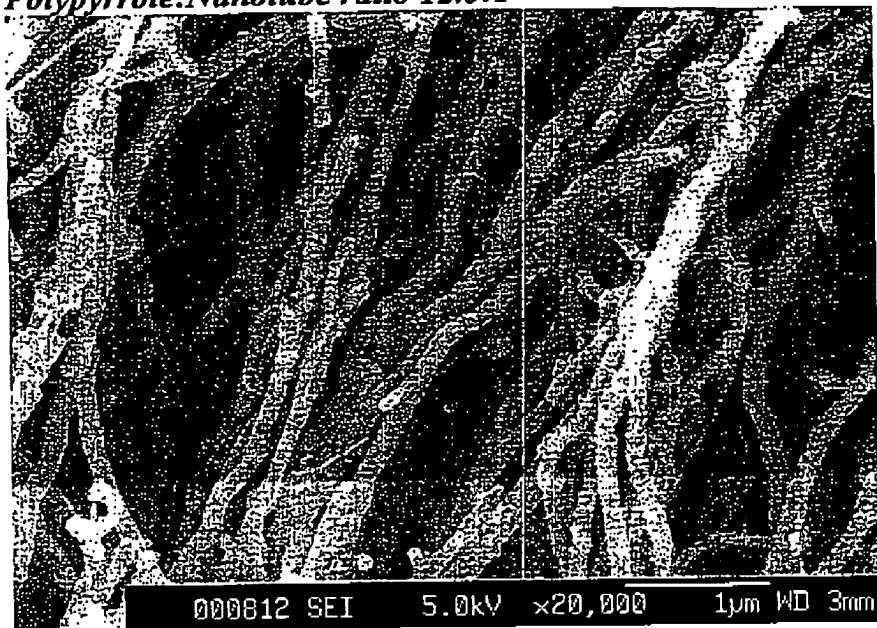


CHRISTINE H. MCCARTHY  
Reg. No. 41844  
Tel. No. 703.905.2143  
Fax No. 703.905.2500

Date: December 17, 2004  
P.O. Box 10500  
McLean, VA 22102  
(703) 905-2000

**Film surface of sample made using our electrochemical technique**

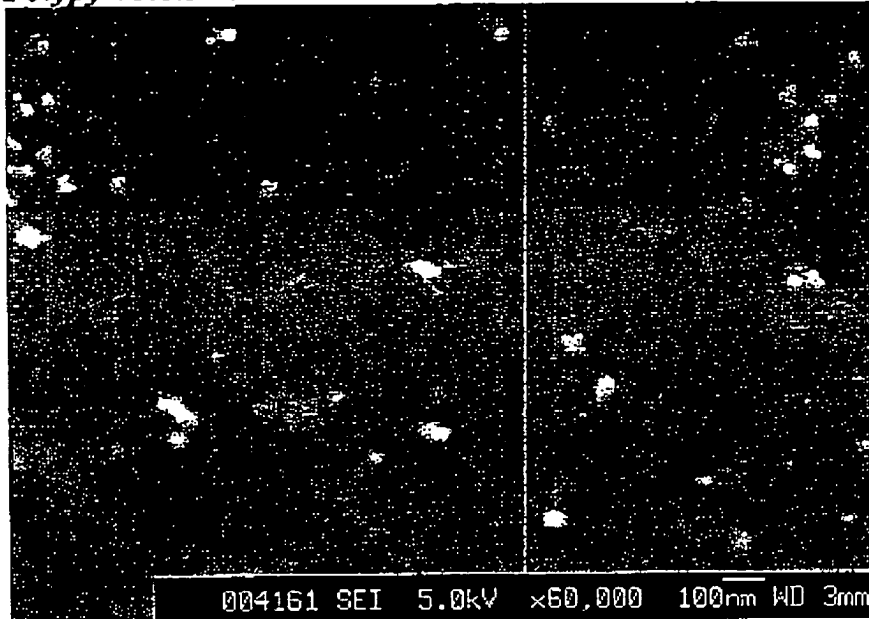
***Polypyrrole:Nanotube ratio 12.5:1***



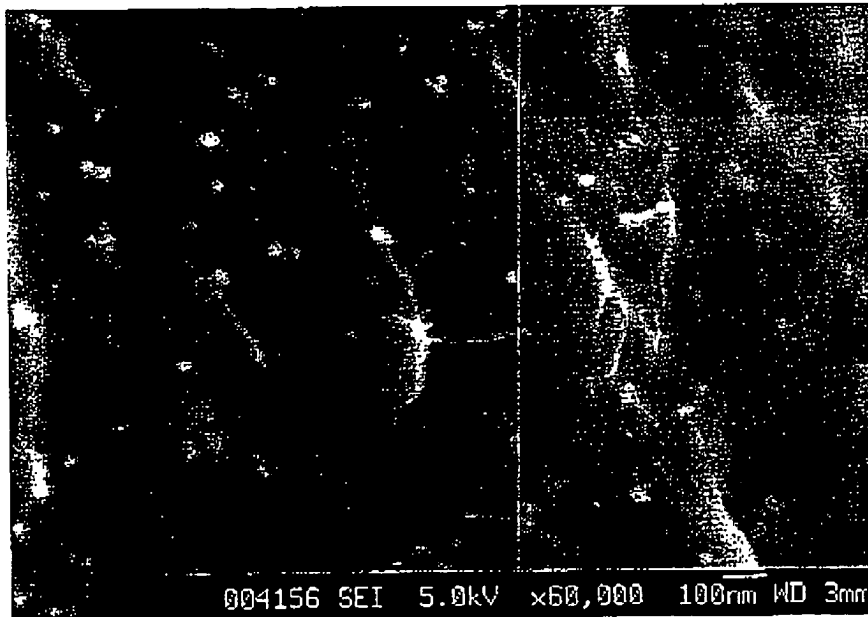
**Figure 1**

**Film surface of sample made in accordance with Niu's filtration technique**

***Polypyrrole:Nanotube ratio 12.5:1***



**Figure 2**



**Figure 3**